

CHAPTER 3. WATER STATUS REPORT

INTRODUCTION

Water is the lifeblood of agriculture. Without a consistent, affordable water supply, western Placer County agriculture would consist largely of dryland farming and unirrigated rangeland. With water, farmers and ranchers in the western County produce a diverse assortment of fruits, vegetables and livestock.

Agricultural water demand depends largely on the type of crop grown. As “price-takers,” farmers and ranchers are unable to pass water costs (and other input costs) on to consumers. Consequently, producers are unable to adjust to increases in water prices. Upward price pressures increase uncertainty for farmers and ranchers, encouraging producers to consider converting their lands to non-agricultural uses.

Finally, several recent developments have impacted agricultural water use in Placer County. While expanded wastewater treatment facilities may provide significant “new” wastewater supplies, existing State regulations limit farmers’ ability to use treated water. The State’s power crisis is having a tremendous impact on agriculture. In addition to disrupting cultural practices and processing activities, increasing power costs and disruptions in electrical service will increase irrigation costs and interrupt irrigation during critical periods. The potential for increased releases from water storage facilities for power generation may draw down water supplies as well. Water quality and other environmental issues are also factors that affect agricultural water diversions and drainage.

AGRICULTURAL WATER SUPPLY

Setting

Placer County agriculture receives the majority of its water from groundwater (generally privately-owned wells) and public water districts that divert their surface water from the American River, Bear River and Yuba River watersheds through an extensive network of canals and natural watercourses. This section describes the sources of raw water and provides information on raw water storage capacity and supply to western Placer County.

SERVICE DISTRICTS AND BOUNDARIES

Most of the farm irrigation water in the western County is provided by four (4) public water districts. They are as follows:

- Placer County Water Agency (PCWA)
- Nevada Irrigation District (NID)
- South Sutter Water District
- Camp Far West Irrigation District

A map of the agricultural water service areas is shown in *Figure 3-1*. There are also an unknown number of private water suppliers to the region. However, no information regarding location, distribution or volumes is available.

While San Juan Suburban Water District and Citrus Heights Water District serve urban water customers in South Placer County, these districts do not provide water for agriculture in the County. The exception to this is that San Juan SWD staff knows of one agricultural operation in Placer County, a strawberry field located at Douglas Boulevard and Barton Road that receives water from the district.¹ The following is a description of each of the major water districts in Placer County. Specific data and information regarding the amount of water allocated for customers by each water district are provided in the next section, entitled “Surface Water Availability.”

Placer County Water Agency

Placer County Water Agency (PCWA) was created in 1957 to deliver water and generate hydroelectric power for Placer County residents and businesses. PCWA’s first major project, the Middle Fork American River Project, was completed in 1967 and the Agency’s Water System was established in 1968. The Agency boundaries are coterminous with those of the County with water delivery serving upwards of 150,000 residential, business, industrial and agricultural customers. A significant amount of the raw water is used to irrigate pastures, orchards, rice fields, farms, and ranches.

The Agency has three (3) main sources of surface water for western Placer County. They include 1) The PG&E supply from the Drum-Spaulding Yuba/Bear River systems; 2) The Middle Fork American River Project (MFP) supply from PCWA; and 3) the Central Valley Project (CVP) supply from the U.S. Bureau of Reclamation (USBR).

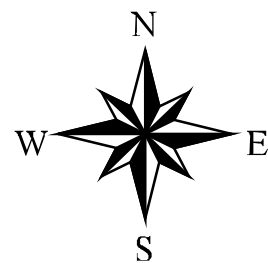
PCWA has established five (5) zones within its service area (refer to *Appendix 1* for the District’s zone map). Zones 1 and 5 are the primary agricultural zones and comprise the vast majority of land within the study area. Zone 5, created in 1999 to correspond with Placer County Zone 29, comprises the majority of farmland within the Agency’s service area, where the bulk of surface water is allocated to commercial agriculture. Zone 5 exists solely for delivery of raw water for groundwater protection and agricultural production (i.e., no treated water). Zone 1 contains most of the remainder of agricultural land within western Placer County.²

¹ Personal Communication with Judy Gray, San Juan Suburban District, March 2001

² *Surface Water Supply Update for Western Placer County*, PCWA, March 13, 2001

FIGURE 3-1
Agricultural Water Service Areas

AGRICULTURAL WATER SERVICE AREAS IN WESTERN PLACER COUNTY



0 5 10 Miles

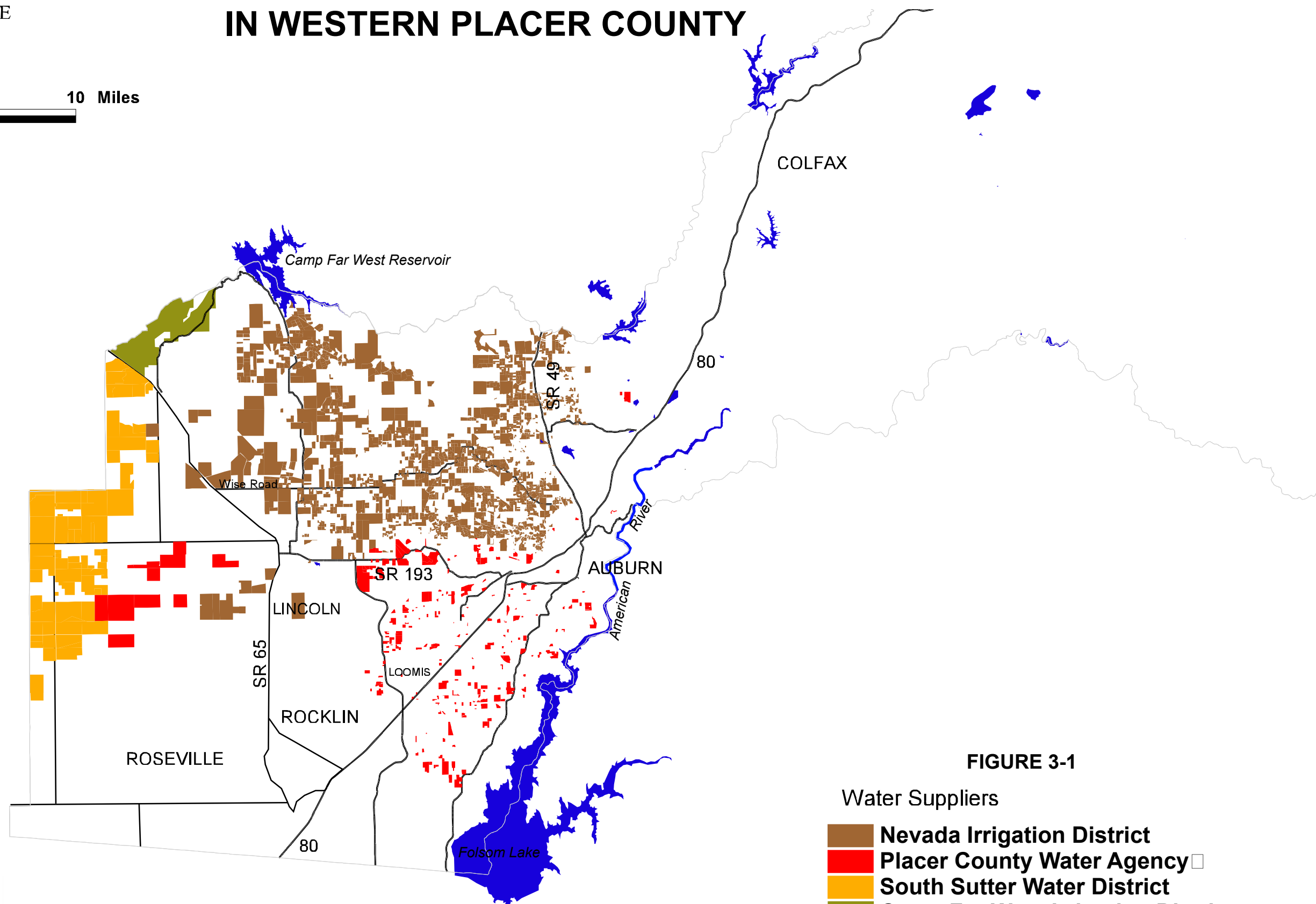


FIGURE 3-1

Water Suppliers

-  Nevada Irrigation District
-  Placer County Water Agency
-  South Sutter Water District
-  Camp Far West Irrigation District



MAP Sources:
Placer County Planning Department

Nevada Irrigation District

When the Nevada Irrigation District (NID) was formed in 1921, it inherited a historic system of reservoirs, dams and canals, many dating to the 1860s Gold Rush era. From the 1920s into the 1950s, NID acquired many private systems that had previously supplied large hydraulic mining operations and developed public water infrastructure to supply water from the Yuba and Bear River watersheds to farms and orchards on the western slope of the Sierra Nevada. Even in abundant water years, the lack of a complete network of canals left customers without a dependable water supply. In 1966, completion of the Yuba-Bear Project created an additional 145,000 acre-feet (AF) of water storage for NID, nearly doubling its storage capacity to 280,380 AF.³ The Yuba-Bear project includes eight reservoirs—Jackson Meadows, Bowman, Rollins, French Lake, Faucherie, Sawmill, Jackson Lake and Milton extend across a 400-square-mile area in Sierra, Nevada and Placer counties—and are operated by NID based near Colfax, Placer County.

Agricultural water use accounts for nearly 90 percent of NID's total demand. During normal and above-normal water years, a portion of the district's supply is wholesaled to neighboring irrigation districts. NID's larger accounts are for commercial crops such as orchards, nurseries, and rice. However, the bulk of the water is used on irrigated pasture. The remainder of irrigation water is delivered to small agricultural operations for uses such as truck crops, family gardens, farmers' market growers, and small pastures.⁴

South Sutter Water District

South Sutter Water District is considered a "supplemental" water district because it does not provide full service to land owners. Most of the District's customers are agriculture-based—and utilize private, deep wells to obtain the bulk of their water. The District supplements growers' water as needed and it is divided among customers based on acreage of land owned. The District's water comes from Camp Far West Reservoir, which has a capacity of 104,000 acre-feet. There are approximately 45,000 acres of land within the service boundaries, with an average of 30,000 to 35,000 planted and irrigated each year.⁵ The most common crop within the South Sutter Water District is rice.

Camp Far West Irrigation District

Camp Far West Irrigation District is a small water district that was organized in 1924 and has been active since formation. The District was originally formed due to the fact that lands in

³ *The Yuba-Bear River Power Project brochure*, NID, February 1999

⁴ *Urban Water Management Plan 1995 Update*, NID, March 1996

⁵ Personal Communication with Etta Ramos, March 2001

Yuba and Placer counties on the north and south side of the Bear River tend to produce alkali well water from the water table if extensive water draw down occurs.

The District services approximately 4,500 acres, most of which are in Placer County, and currently has 10 active accounts. Historically, landowners within the District boundaries have grown walnuts, almonds, prunes, rice, pasture, winter and spring grains and multiple types of hay.⁶

Camp Far West Irrigation District receives the first 13,000 acre-feet out of Camp Far West Reservoir; the remainder is then allocated to South Sutter Water District.

SURFACE WATER AVAILABILITY

Each of the four water districts provided information on their current and projected water supplies. The districts combine to provide approximately 639,780 AF per year of water storage capacity, of which 545,338 AF are available for farmland irrigation. Actual supply depends on annual precipitation, raw water commitments outside of the service area, and cost of water to the agencies as contracts are renewed. A summary of the approximate quantity of water available to commercial agriculture from the four water districts is shown in *Table 3-1*.

Placer County Water Agency

The maximum amount of water available for commercial agriculture under PCWA's contract with PG&E in Zone 1 is 100,400 AF per year. The contract, which was signed in 1968, is scheduled to terminate during 2013 and is renewable subject to price revisions. PCWA indicates that approximately 78,700 AF is delivered to its raw water agricultural customers in Zones 1 and 5. Consequently, there is more than enough water available to meet the present demand (*Note: a discussion on water demand follows later in this chapter*).

TABLE 3-1

Water Storage Capacity and Current Allocation to Agriculture

Water Supply	Total Capacity (AF/yr)	Percentage to Agriculture
Placer County Water Agency	255,400	74% ^a
Nevada Irrigation District	280,380	90%
South Sutter Water District	91,000	100%
Camp Far West Irrigation District	13,000	100%
TOTAL	639,780	-----

^a Percentage of total water allocated to raw water customers in Zones 1 and 5.

⁶ Letter from John A. Eachus, Camp Far West Irrigation District, May 1, 2001

Water supply from the Middle Fork Project is currently limited to a maximum of 120,000 AF of water per year. This water is available to the Agency from the American River either at Auburn or Folsom Dam. The principal raw water diversion facilities associated with the Middle Fork American River supply are the temporary American River pump station, the Auburn Tunnel and the Auburn Tunnel pump station. *[Note: The pumps are temporary because they are removed by the U.S. Bureau of Reclamation (USBR) each fall to avoid damage from high river flows during winter months and reinstalled by the USBR each spring. Plans for a permanent pump station are discussed later in this chapter.]* With these facilities, the Agency has the ability to deliver water to agriculture in the western County—specifically to supply the surface water needs of PCWA Zone 1 and a portion of Zone 5.

PCWA entered into contract with USBR for water from the Central Valley Project in 1970 (with some subsequent modification). The original contract provides for a maximum of 117,000 AF per year. A subsequent letter of agreement between USBR and PCWA limits the amount of water to the Agency from this source to 35,000 AF per year prior to completion of the Auburn Dam.

Current water usage in PCWA Zones 1 and 5 (108,700 AF/yr) exceeds the total current deliveries from the Agency's entitlement sources because the Agency also receives about 3,000 AF of temporary surplus surface water through a contract with South Sutter Water District from Nevada Irrigation District.⁷

Nevada Irrigation District

NID water is stored in 10 reservoirs within a 300 square-mile watershed. The district receives its surface water for Placer County from Jackson Meadows on the Middle Fork of the Yuba River; Bowman Reservoir on Canyon Creek; Combie Reservoir on the Bear River; and Rollins Reservoir also on the Bear River.

Between 1975 and 1995, NID's annual water sales to agricultural customers increased by 17 percent from 124,784 acre feet to 145,723 acre feet (Note: these figures include a 15 percent system loss factor⁸). Between 1990 and 1995 there was a slight reduction (2 percent) in sales. NID's *Urban Water Management Plan 1995 Update* projected sales of 147,000 AF for the year 2000. Actual sales to agricultural customers in 2000 totaled 134,100 AF. Therefore, approximately 2,000 AF of water have typically been available annually for delivery to municipalities for treatment and resale, but not guaranteed.⁹

South Sutter Water District

The sole source of South Sutter's water supply is Camp Far West Reservoir providing 104,000 AF of capacity. The first 13,000 AF are allocated to Camp Far West Irrigation District, with the

⁷ *Surface Water Supply Update for Western Placer County*, Placer County Water Agency, March 13, 2001

⁸ These losses include evaporation, seepage from canals, and other losses.

⁹ *Urban Water Management Plan 1995 Update*, NID, March 1996

remaining water distributed among SSWD's customers based on the amount of acreage of land owned.¹⁰

Camp Far West Irrigation District

The 13,000 AF that Camp Far West Irrigation District receives each year from Camp Far West Reservoir is distributed near equally between Placer and Yuba counties. Two (2) AF per acre has typically been the maximum amount of water available to the District's customers.¹¹

The current challenge for canal operators is to maintain relatively stable water levels for the entire length of the canal, thereby assuring water service will be available to all customers along the canal, while at the same time customers may be changing their water usage. When canal operators overestimate customer usage, portions of the canal go dry resulting in customer complaints. Canal operators tend to over-estimate customer usage slightly to avoid customer complaints. This results in water being spilled from the ends of the canals from time to time.

GROUNDWATER AVAILABILITY

A large groundwater basin underlies a portion of western Placer County—that is the area that lies west of Highway 65. This basin is part of the greater Central Valley Basin that extends from Redding to Bakersfield. Currently the City of Lincoln extracts groundwater from wells near the Lincoln Airport for municipal use.

None of PCWA's groundwater supplies are used for commercial agriculture. Many farmers must rely on groundwater pumped from private wells as their primary water supply.

NID has no groundwater contracts, but reclaims minor amounts of water in the Auburn Ravine. This water is added back into the main supply for customers within this service area.

Further study would be required to determine what percentage of the total supply of agricultural water in western Placer County contributed by groundwater.

RECLAIMED WATER AVAILABILITY

The City of Roseville is the only jurisdiction that has planned for and is currently using reclaimed wastewater. Reclaimed wastewater from the Dry Creek Wastewater Treatment Plant is supplied to various golf courses and parks in Roseville. No reclaimed water is delivered to agricultural customers.

No other large sources of reclaimed water available for use have been identified (Note: future availability of reclaimed water from the Pleasant Grove wastewater treatment plant is

¹⁰ Personal Communication with Etta Ramos, South Sutter Water District, March 2001

¹¹ Letter from John A. Eachus, Camp Far West Irrigation District, May 1, 2001

discussed later in this report). Information regarding the use of reclaimed water by privately owned and operated wastewater treatment facilities in Placer County is not readily available and would require research that is outside the scope of this project.

WATER INFRASTRUCTURE AND DISTRIBUTION

Figure 3-2 shows the location of agricultural water conveyance facilities in the western County. They include facilities owned and operated by PCWA, NID, PG&E South Sutter Water District and Camp Far West Irrigation District (*Note: Service district boundaries are shown in Figure 3-2*).

Much of the County's surface water conveyance system, originally constructed as part of mining operations in the late 1800s, has since been expanded by PCWA and NID and is still used to meet the needs of the agricultural industry and agricultural-residential users. New reservoirs, canals, pipelines and flumes have been constructed to convey water to new uses, including farmland irrigation.

PCWA and NID deliver their raw surface water to agricultural customers in the western County at separate delivery points through a PG&E-owned conveyance facility along the Bear River and Wise/South Canal. Principal raw water diversions associated with the Middle Fork American River supply are pumped seasonally (spring and summer) by PCWA through the Auburn Tunnel into the Auburn Ravine. Agency water deliveries are routed down Auburn Ravine and diverted to agricultural customers in PCWA's Zones 1 and 5.

South Sutter Water District provides the vast majority of surface water to the far west county rice fields. Its canal system originates from Camp Far West Reservoir and flows southwest along Camp Far West Road to the westernmost portion of the County. Camp Far West Irrigation District's conveyance facilities roughly parallel those of SSWD, and consist of two (2) laterals carrying water to Yuba County north and to Placer County south of the Bear River.

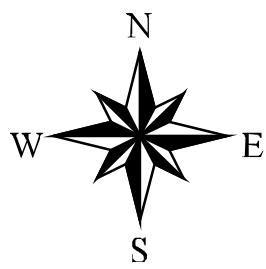
Each of the districts serving Placer County agriculture makes some use of natural stream courses for delivering water. By putting water into these streams during the summer irrigation season, the districts may provide environmental benefits as well as agricultural water.

Outlook

Each of the water districts provided information regarding future capacity and supply for their agricultural customers in western Placer County. PCWA drafted a water supply discussion update and reevaluation of its policy direction in March 2001; NID's most recent water management plan was completed in 1995, although the District is currently in the process of preparing another update. Forecasts for South Sutter Water District and Camp Far West Irrigation District were supplied through verbal and written communications with employees of the districts.

FIGURE 3-2
Water Districts and Conveyance Facilities
Serving Agriculture in Western Placer County

WATER DISTRICTS AND
CONVEYANCE FACILITIES
SERVING AGRICULTURE IN WESTERN PLACER COUNTY



0 5 10 Miles

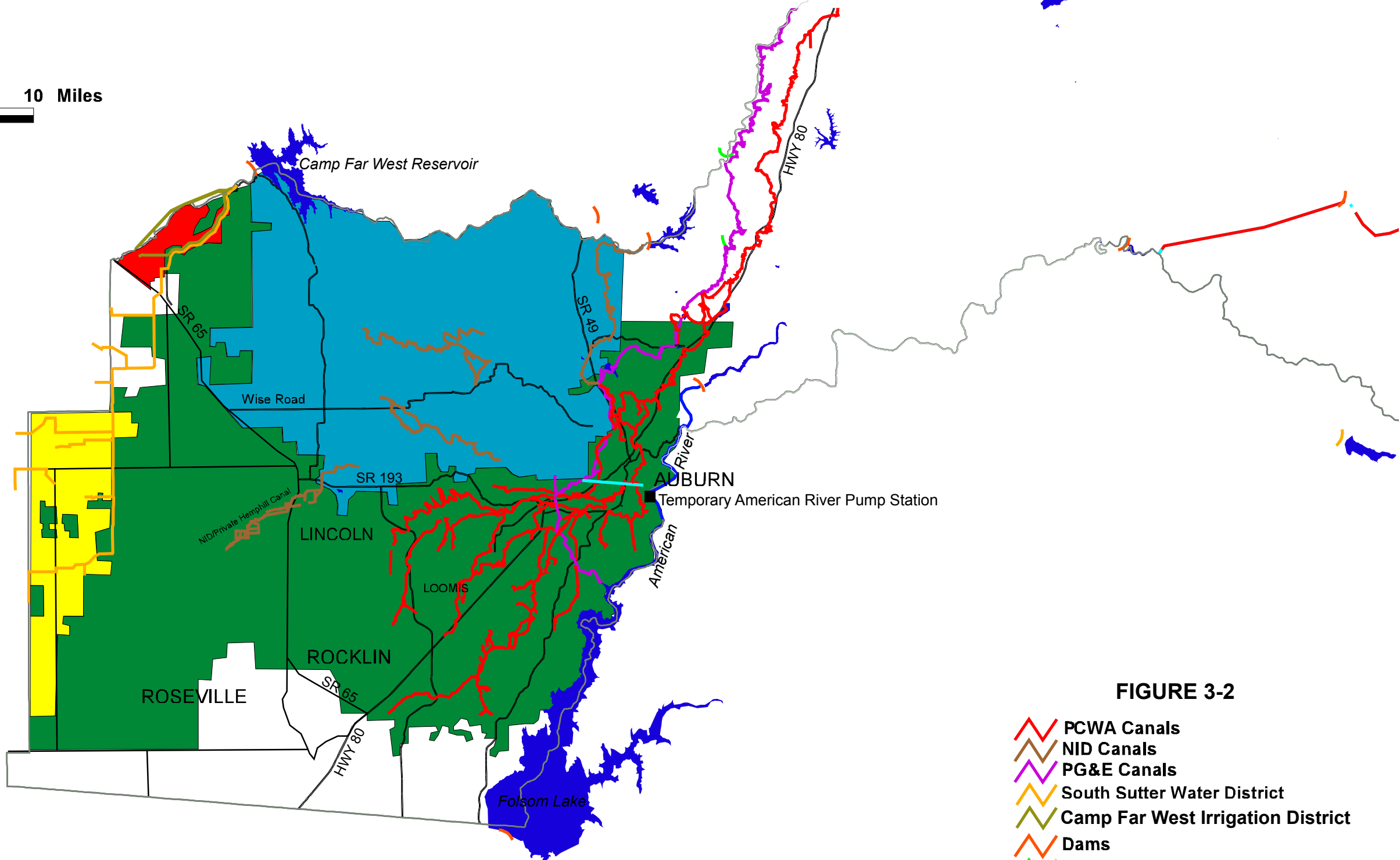


FIGURE 3-2

- PCWA Canals
- NID Canals
- PG&E Canals
- South Sutter Water District
- Camp Far West Irrigation District
- Dams
- Spills
- Tunnels
- Surface Water Storage
- Placer County Water Agency
- South Sutter Water District
- Nevada Irrigation District
- Camp Far West Irrigation District

MAP Sources:
Nevada Irrigation District Major Canal System, NID (Revised 12/10/97)
Existing Raw Water Distribution and Storage Facilities within Western Placer County, PCWA (2001)
South Sutter Water District Boundary Map, South Sutter Water District (not dated)
Map of Camp Far West Irrigation District, Camp Far West Irrigation District (8/77)



SURFACE WATER AVAILABILITY

Placer County Water Agency

PCWA forecasts that it can provide water (treated and raw) to western Placer County if Placer County cities and unincorporated areas build out under the land use scenarios (within their respective jurisdictions) as adopted in their general plans and community plans. Agency staff has informed the development community and those reviewing the general plans that may include annexations of additional land that it will have a shortfall in surface water supply to meet any new annexation areas within the Agency's service area in addition to the areas as designated under current general plans.

The Agency assumes that surface water, not groundwater, is the primary source of water for new development in the western portion of the County. It does not assume any long-term increase in groundwater use by the Agency in normal hydrologic years in Zones 1 and 6. Groundwater use is assumed for commercial agricultural purposes in Zone 5. PCWA assumes modest increase of an additional 6,000 AF in raw water deliveries in Zones 1 and 5.

The 3,000 AF of temporary surplus surface water that the Agency currently receives through South Sutter is not expected to be available at general plan buildout for PCWA's use because it will be required within the service areas of South Sutter Water District or Nevada Irrigation District.¹²

Water availability to new annexation areas Supplying water to a new annexation area could result in a significant cumulative environmental impact, unless mitigated through measures such as increased use of reclaimed water, or participation on the Agency's regional water use efficiency program (Mal Toy, PCWA, 12/01). Currently, the Agency does not assume an increase in reclaimed water use above today's level in its projections for supply because, while increased reclaimed water use is likely, the Agency is not involved in any planning efforts with local wastewater utilities that would allow it to incorporate the use of reclaimed water in its projections. The Agency does not assume any major increase in raw water or treated water use efficiencies in the immediate future, either. It is likely that there will be increased water use efficiency, but the Agency has not made estimates of probable reductions in future demand.

PCWA has indicated that it is committed to supplying raw surface water to its commercial agricultural customers regardless of the water needs of future urban growth beyond the current General Plans. The Agency states that it is committing approximately 12,000 afa to its commercial agriculture customers adjacent to Auburn Ravine. The Agency may provide an additional 5,000 afa, in any given year, to its commercial agricultural customers "if that water is deemed surplus to the needs of NID and South Sutter Water District. The Agency's commitment is conditioned in that the water must be used for commercial agricultural purposes and would be terminated if the land use were converted to urban growth. Under

¹² *Surface Water Supply Update for Western Placer County*, Placer County Water Agency, March 13, 2001

existing Agency policies, surface water supplied to the Agency's commercial agricultural customers will not be placed on the open market "for sale" to non-agricultural users.

Sacramento Diversion facilities PCWA has begun the effort for raw water delivery with the proposed Sacramento Diversion facilities. This would involve the construction of a new treatment plant to serve development in southwest Placer County with water diverted from the Sacramento River near the Sacramento Airport. The project would provide an additional 35,000 acre-feet per year (afa) of raw surface water supply and 65 million gallons per day (mgd) of treatment capacity into the Agency service area. The Agency would be exchanging its 35,000 afa U.S. Bureau of Reclamation contract water on the American River for an equal amount of federal or State water on the Sacramento River. Congress authorized the USBR to complete a feasibility study and environmental impact analysis on this project. If the project is approved, the Agency anticipates construction of the project could be completed by 2010 (Mal Toy, PCWA, 12/01).

Policy direction PCWA's challenge will be to work with the land use authorities to develop a comprehensive approach to potential future requests for intensified land uses in the form of general plan amendments. The Agency is looking at policy directions and whether its past policies on the allocation of surface water for western Placer County should apply in the future. Various policy directions suggested by the Agency in their March 2001 surface water supply update discussion include to:

- Continue "as is" on a first-come, first-served basis;
- Shift to a fixed allocation of the Agency's water supply to each of the land use jurisdictions;
- Assume "hard limits" on water supply;
- Re-evaluate the portion of PCWA's water resources that are delivered for raw water uses and the manner of delivery;
- Re-evaluate the portion of the Agency's water resources that are projected for future urban development; and
- Increase the size of the overall water supply "pie" through the aggressive use of reclaimed water, water use efficiency practices and/or development of additional water supplies.¹³

The purpose of providing these possible policy directions was to inform the various land use jurisdiction representatives of the ability of the Agency's surface water entitlements to meet the needs of the current general plans in its service area in the western County and to initiate dialogue with those representatives regarding the Agency's surface water policies. A decision has not been made by the Agency as to the content or timing on any PCWA surface water

¹³ *Ibid.*

policy changes. The policy of first-come, first-served continues to be the Agency's operating premise. The Agency is still soliciting input from the County, cities and town representatives in its consideration of surface water policies (Mal Toy, PCWA, 12/01).

Nevada Irrigation District

NID's average water supply of nearly 330,000 AF is 185 percent of the estimated demand of 176,800 for the year 2015. Use of refined watershed operating techniques is expected to increase the average supply available and, in turn, increase the supply/demand ratio. This increasingly more favorable ratio, combined with the conservation measures identified in the District's *Agricultural Water Management Plan* will continue to provide adequate water supplies to meet the District's projected demands through the year 2015 with no expected deficiencies under normal water years.

The District does not expect significant increases in demand over the next 20 years and has no plans to increase existing capacity. NID's *Urban Water Management Plan 1995 Update* projected an increase of 5 percent from 145,723 AF to 153,000 AF between 1995 and 2015. As land within the District's boundaries becomes urbanized, the water presently allocated for agriculture will shift to urban uses. Since NID's projections include the assumption that treated water (urban) customers tend to use less water per acre than their agricultural counterparts, the result will be very little change in the overall water demands caused by the change in land uses. However, other data suggest that urban users require the same amount of water per acre as agricultural users.¹⁴ With some irrigable lands currently unused, as these lands are brought under irrigation, a corresponding increase in demand for raw water is expected.¹⁵

South Sutter Water District

South Sutter has no plans to increase existing capacity, although the district indicated that it could use an increase in water supply. The district owns the proposed Garden Bar dam site above the existing Camp Far West reservoir, but the feasibility of using this site is very low due to political, environmental, and monetary considerations.¹⁶

Camp Far West Irrigation District

While two AF per acre has typically been the maximum available, with the low snow pack in Winter 2001, significant cutbacks will likely be made. With the exception of drought years, Camp Far West Irrigation District can meet current and projected demand based on 4,500 irrigated acres. The District has no plans to expand or reduce its capacity at this time.¹⁷

¹⁴ *Farm Water Fact Book*, California Farm Water Coalition (1998), p. 11.

¹⁵ *Urban Water Management Plan 1995 Update*, NID, March 1996

¹⁶ Personal Communication with Brad Arnold, South Sutter Water District, January 2002.

¹⁷ Letter from John A. Eachus, Camp Far West Irrigation District, May 1, 2001

Auburn Dam

At the present time, there are no authorized plans or funding to construct the Auburn Dam. Therefore, the dam is not considered to be a future source of surface water for agriculture in western Placer County.

GROUNDWATER AVAILABILITY

The cost of using groundwater is dependent on several factors. Obviously, energy costs directly impact the cost effectiveness of pumping groundwater. Other factors include pump efficiency, depth to groundwater and aquifer pressure. With recent increases in all energy costs, groundwater pumping has become more costly for farmers and ranchers. Several state programs exist to help producers upgrade equipment, thus increasing efficiency and reducing energy use.

Placer County Water Agency is the only water agency that includes groundwater as a portion of its supply. None of PCWA's groundwater is allocated to agriculture, however, and no change is anticipated in this supply.

RECLAIMED WATER AVAILABILITY

The Placer-Nevada Regional Wastewater Authority has been formed with the intent to regionalize wastewater treatment at an expanded City of Lincoln facility. The Pleasant Grove Regional Wastewater Treatment Facility is presently under construction in Lincoln and is scheduled to be operational by Spring 2002. Its initial 12 mgd capacity will produce 11.5 mgd of reclaimed water for offsite use.

A recent presentation by the plant's construction spokesperson indicated that the entire supply of reclaimed water is anticipated to be exported offsite to the Enron power plant, which is proposed for construction immediately adjacent to the treatment plant.¹⁸ Consequently, this significant amount of reclaimed water is not expected to be available initially to agricultural water users.

It is estimated that more than 33,000 AF (30 million gallons per day) of reclaimed water would be available in western Placer County when this facility reaches its ultimate design flow (PCWA 3/13/01). Directing reclaimed water into canals would require construction of a second system since existing State law does not presently permit mixing reclaimed water with raw water.

¹⁸ Chuck Percival, Brown and Cauldwell, Placer County Ag Tour 6/14/01.

RAW WATER CONSERVATION

Currently PCWA has a multifaceted approach to improving its raw water system efficiency. This includes: repair of canal lining or encasement, where appropriate; maintenance of the canal system; installation of a flow monitoring system at critical locations, and an education and public relations program for both the Agency's raw water customers and the general public.

WATER INFRASTRUCTURE AND DISTRIBUTION

PCWA's ability to access and deliver its full surface water supply entitlement to western Placer County is dependent upon "the construction of a wide variety of important and major new infrastructure."¹⁹ Such facilities include a permanent new pump station on the American River at Auburn and a new diversion facility and treatment plant on the Sacramento River.

The permanent American River Pump Station project is being done in cooperation with the U.S. Bureau of Reclamation. The Reclamation negotiators have agreed in public contract negotiation sessions that, in exchange for other concessions, the United States will pay for 100 percent of the cost of a new facility capable of delivering up to 35,500 acre feet. Since the estimated cost exceeds Congressional and State appropriations for the project, additional appropriations will be necessary. Assuming full funding is obtained, PCWA anticipates that the project will begin construction in 2002 and be completed in 2004 (Mal Toy, PCWA, 12/01).

NID, South Sutter Water and Camp Far West Irrigation districts have no plans for future expansion of their delivery systems.

Water Quality and Environmental Issues

Irrigated agriculture is generally concerned with the quantity of water available. However, concerns over water and environmental quality are increasingly impacting farmers and ranchers. Water quality issues related to agriculture include impacts on water temperature, dissolved oxygen, and discharge nutrients and crop protection products. In addition, the state and federal Endangered Species Acts may reduce water diversions or require expensive measures to protect aquatic species.

¹⁹ Surface Water Supply Update for Western Placer County, Placer County Water Agency, March 13, 2001

AGRICULTURAL WATER DEMAND

Setting

The demand for water from agricultural producers varies from crop to crop. Obviously, some crops require more water than others. Equally important, however, is the difference in “hard” versus “soft” water demand. Permanent crops, like fruit trees and grapes, require a more consistent supply of water than annual crops, like rice, tomatoes and corn. While permanent crops may be better suited to the use of water-conserving technology (like drip irrigation or micro-sprinklers), these crops must receive a certain amount of water each year. Annual crops, on the other hand, may be fallowed in times of water shortage. As a result, the conversion of agricultural land to permanent crops (often encouraged to conserve water and increase producer income) “hardens” the demand for reliable water and decreases flexibility in shifting agricultural water to other uses. Decreased flexibility can drive farmers from the agricultural industry.

Water conservation (e.g., water demand efficiency) is also a complex subject. While certain technologies (like drip irrigation) can reduce water use for certain crops, these technologies must be matched to soil type and other environmental factors. Furthermore, investments in conservation technologies involve important trade-offs. For example, flood irrigation of pasture or alfalfa can provide recharge opportunities for groundwater basins.²⁰ Farmers can increase water application efficiency through various management techniques, including:

- Improved plant varieties,
- Laser-guided leveling of land,
- Irrigation techniques and delivery systems designed to ensure optimum efficiency for specific crops, and
- On-farm water recycling programs (use of tailwater).

The California Department of Water Resources (DWR) in its State Water Plan (Bulletin 160) analyzes water demand for specific crops and specific regions. The most recent update of this plan was completed in 1998. Using aerial photographs, visual on-site inspections, crop-specific water demand information and county crop reports, DWR estimates both current and future water demand.²¹

²⁰ *The Water Fact Book: California Agriculture and its Use of Water*, California Farm Water Coalition, page 23.

²¹ Personal Communication with Richard Cocke, DWR, March 7, 2001.

Water use efficiency takes on different dimensions for rural residential users. For most of these water users, price signals that may encourage conservation for farmers are not a factor in their decisions to use water. Many of the small landowners within the service areas of NID and PCWA use raw water to irrigate landscaping. Much of this irrigating is done without consideration of water saving techniques.

Finally, drought is a complex subject. Traditionally, droughts have been defined as weather-related events. More recently, however, droughts can be created from a variety of factors. Increased demand by competing uses (urban, industrial and environmental) can create droughts for agricultural water users. In addition, the ability of urban and industrial users to out-bid farmers for water can create price-related droughts. Increased urbanization will likely exacerbate this problem.

In Bulletin 160-98, DWR estimated the following agricultural water demand for Placer County. These estimates are based on the land use maps obtained by Placer County (*Figure 3-3* and *Table 3-2*).

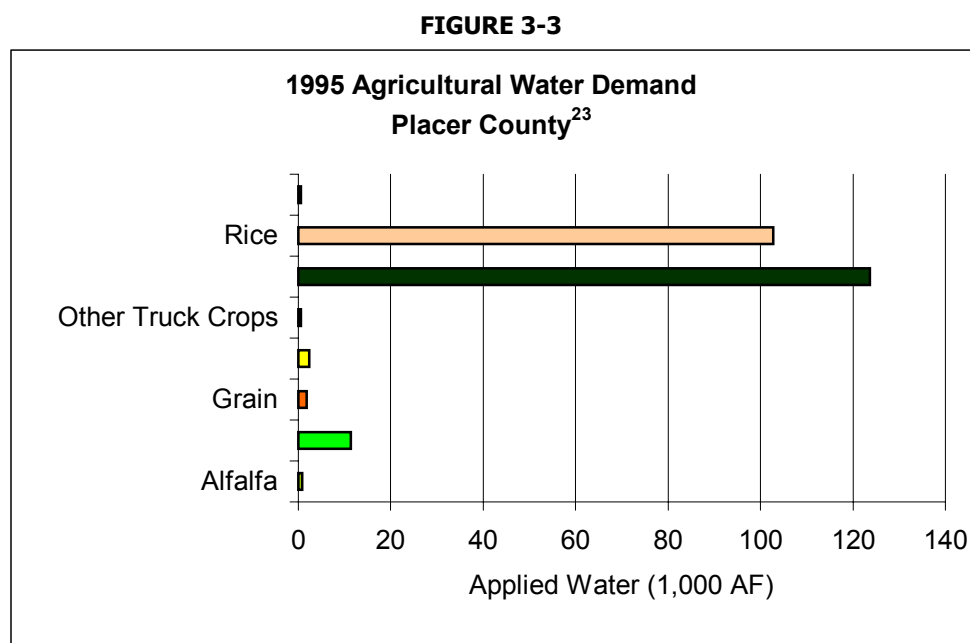


TABLE 3-2

1995 Agricultural Water Demand – Placer County²²

Crop	Applied Water (acre feet)
Alfalfa	900
Deciduous Fruit Trees	11,400
Grain	1,800
Other Field Crops	2,400
Other Truck Crops	500
Pasture	123,700
Rice	102,700
Vineyards	600

Outlook

Future agricultural water demand is also analyzed by DWR, based on projected technological improvements and associated water conservation, local growth patterns and land use changes, and projected cropping patterns. Placer County should²³ note, however, that the California Research Bureau indicates, “Water saving through irrigation improvements and crop selection cannot be expanded indefinitely.”²⁴ According to DWR, 2020 water demand for Placer County are shown in *Figure 3-4* and *Table 3-3* below.

²² *Ibid.*

²³

²⁴ *Agriculture, Water and California’s Drought of 1987-92, Background, Responses, Lessons*, Kenneth W. Umback, Ph.D., California Research Bureau, California State Library, April 1994.

FIGURE 3-4

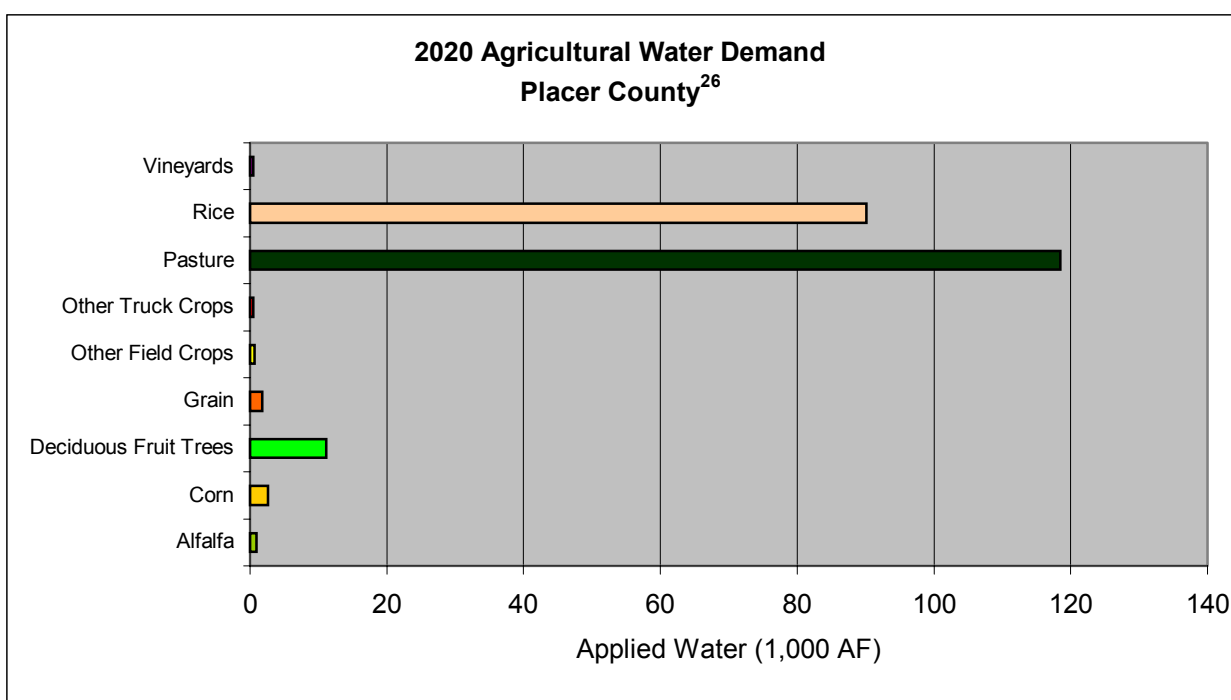


TABLE 3-3

2020 Agricultural Water Demand – Placer County²⁵

Crop	Applied Water (acre feet)
Alfalfa	900
Corn	2,600
Deciduous Fruit Trees	11,100
Grain	1,800
Other Field Crops	700
Other Truck Crops	500
Pasture	118,500
Rice	90,100
Vineyards	500

²⁵ Ibid.

The changes in demand projected over the next 20 years result from a variety of factors. DWR assumes that improvements in water use efficiency will likely reduce overall water consumption by agriculture. The larger decreases in demand in 2020, however, are due to conversion of agricultural land to other uses. This reduction is especially pronounced for rice and irrigated pasture. DWR's projections assume that substantial rice and pastureland will be developed over the next 20 years. These reductions in agricultural water use do not equate to decreases in total water use, however. Ranchettes and estate properties are typically inefficient when compared to commercial agricultural users.

COMPETITION FOR WATER BETWEEN AGRICULTURAL AND URBAN USES

Conversion of land from agriculture to residential, commercial and industrial use poses critical questions for policy makers and remaining farmers and ranchers. First, the applied water use for single-family dwellings and crop production is often similar at low housing densities (four to five units per acre). High-density developments tend to use more water than many crops on a per acre basis.²⁶ Thus, if total water demand increases due to development, additional water may be shifted away from agriculture. Second, like permanent crops, municipal and industrial water users demand "hard" supplies; that is, these users are generally the last to have their supplies reduced in times of drought. Consequently, agricultural users are the first to have their supplies reduced during dry years.

FUTURE OF RECLAIMED WATER

New, yet unidentified sources of reclaimed water may provide new options for agriculture. Tertiary treated water is used by agriculture in other regions of the state, including Sonoma and Monterey, depending on the crop.

Title 22 The Department of Health Services (DHS) Title 22 regulations limit other opportunities in Placer where high water demand crops such as rice are restricted from secondary water application. Questions regarding the use of reclaimed water for crop production have not yet been resolved at the state and regional levels.

Agricultural producers support the development of reclaimed water for a supplemental supply, especially in areas where fresh water supplies are limited or areas where reclaimed water supplies are available. There is strong opposition to the State mandating the use of reclaimed water for any use when fresh water supplies are available.²⁷

²⁶ *Farm Water Fact Book*, California Farm Water Coalition (1998), p. 11.

²⁷ Ron Liebert, California Farm Bureau Federation, personal communication.

ENERGY IMPACTS

The State's ongoing energy crisis is having a significant impact on California's \$27 billion agricultural industry, and on Placer County growers. Escalating natural gas prices and depleted reserves are pressuring the agricultural and food processing sectors, and are projected to continue during peak usage this summer. High electricity costs are compounded by "dry-year" projections, reducing surface water deliveries and intensifying ground water pumping, also escalating costs. Diesel prices in California are significantly higher than the national average, placing California farmers at a competitive disadvantage for fuel costs related to truck, tractor and harvesting equipment use, as well as pumping. Rising energy costs directly impact input costs such as fertilizer, and packaging materials. The agricultural industry is severely limited in its ability to pass these increased costs on to the consumer. California Department of Food and Agriculture statistics show that although production costs have increased by 25%, farmers are receiving 1% less for their commodities than in 1980.

Special legislation passed in 2001 provides funds to agriculture for incentive-based conservation, efficiency, demand-side management and generation distribution of electricity. Biomass facilities and qualifying facilities are also being evaluated for additional power generation throughout the state and may offer opportunities to Placer County. Biomass power generation may provide additional markets for agricultural products, depending on where such facilities are located. On the other hand, power generation requires large quantities of water, which may detract from agricultural water supplies. For example, the proposed 750 megawatt plant in Lincoln may alleviate power shortages but could increase pumping of groundwater.

Groundwater

Demand for groundwater will fluctuate depending upon the availability and cost of surface water supplies. Demand will also fluctuate depending on pumping costs, which in turn are a function of energy costs and depth to groundwater.

CONCLUSIONS

Contrary to the conclusions reached in an analysis prepared by at least one local water purveyor, this report concludes that conversion of agricultural land to urban and suburban uses, as well as increased environmental water demands, will likely reduce the amount of agricultural water available in Placer County, mirroring statewide trends.

On the other hand, new treatment facilities and changing public attitudes about treated water use may provide new opportunities for irrigated agriculture. Water agency officials and the agricultural community should consider opportunities for addressing water use efficiency, water re-use (both on-farm and county-wide), and other tools for increasing water supply consistency.

POLICY QUESTIONS TO CONSIDER

- If water is to be sold to the highest bidder, will farmers and ranchers be the losers?
- If reclaimed water is unavailable for agriculture (due to State regulations, lack of infrastructure, etc.) can it be made available to golf courses, landscaping, and freeing up raw water for agriculture?
- To what extent will hard water demand in high-density housing and industrial uses impact agricultural customers?
- Why is agriculture the first to have its supplies cut during dry years?
- Shouldn't water conservation and awareness be a priority with the County in all years, and not just the dry ones?
- If Placer County is surpassing other California counties in its programs for agriculture, then shouldn't it be in the forefront of water usage too?
- To what extent can the County influence water district policy direction?

RECOMMENDATIONS

1. *Agricultural Water Infrastructure Study* The County should implement its plan to conduct an analysis of the future water infrastructure needs for agriculture. This study should identify constraints to expanding agricultural water supplies, constraints to delivering existing supplies to agricultural producers (including regulatory constraints), and identify a range of proposals for addressing these constraints. Ideally, this study should provide a strategic plan for the County and for the water districts that supply agricultural water in the County that prioritizes actions for expanding water supply and making existing supplies more reliable. This study should also evaluate groundwater resources.
2. *Agricultural Water Management Council* Established by state legislation in 1990, the Agricultural Water Management Council is comprised of agricultural water districts, environmental groups and other interested parties (e.g., agricultural organizations, etc.). This Council oversees the implementation of a memorandum of understanding (MOU) that requires signatories to develop a water management plan. These plans provide a framework for analyzing the impacts and cost effectiveness of a variety of "efficient water management practices."

Participation in the Council may increase a district's access to funding for water conservation projects, including grants to landowners for on-farm improvements. Nevada Irrigation District is currently a member of the Agricultural Water Management Council and has completed an agricultural water management plan.

We recommend that the other districts that supply agricultural water in Placer County consider joining the Council to develop plans.

3. *Water Pricing* As price takers, farmers and ranchers cannot pass their costs along to consumers. Consequently, farmers and ranchers cannot compete for water resources with users who can pass costs to consumers. Agricultural water should continue to be priced at levels that are economically feasible for agricultural production.
4. *Agricultural Land and Water Conversions* A portion of the water from agricultural lands converted to other uses should be retained as agricultural water. This policy would solidify the agricultural water supply, assuring remaining producers that water will be available in the future.
5. *Dry Year Water Supply* Mandatory water use reductions should be applied equally to all uses during dry years. Such a policy would reduce the economic impact on agricultural users.
6. *Suburban Water Conservation* The agricultural community should work with water districts to encourage water conservation among suburban and ranchette water users.
7. *Agricultural Water Savings* Agricultural water conserved through increased efficiency should be retained for agricultural use. This would allow the water districts serving County farmers to expand their agricultural water supplies.
8. *Water Rights and Impoundment* The County should educate rural residential landowners regarding water rights and water impoundment (pond construction) since agricultural water users are often impacted by rural residential water users who impound water for ponds and other uses.
9. *Reclaimed Water* The County and agricultural landowners should discuss opportunities with appropriate agencies for trading reclaimed water to golf courses, and other landscaping uses in exchange for fresh water for agriculture. Support efforts to amend Title 22 revisions based on new science to allow reclaimed water on rice and other food crops.
10. *Energy* In April of 2001, Governor Davis signed SBXI 5, an energy conservation package that includes \$90 million for agricultural load reduction and energy efficiency programs. The program offers the following financial conservation

incentives to be distributed by the California Energy Commission. Funds are available for the following projects:

- The purchase and installation of high-efficiency electrical agricultural equipment and other equipment or any facility installed to achieve peak period electricity reduction. Projects installed on or after Jan. 1, 2001 can qualify for funding. Eligible projects include refrigeration and other cold storage equipment, pumps and premium motors, and automated control systems.
- The testing of agricultural water pumps and retrofitting or replacing pumps and premium efficiency motors to increase efficiency.
- The purchase and installation of advanced metering and telemetry equipment for agricultural and water pumping customers to improve load management and use demand responsiveness techniques. This includes irrigation scheduling systems.
- Offsetting the costs of retrofitting existing natural gas powered equipment to burn alternative fuels, including, but not limited to, in-state produced "non-spec" or "off-spec" natural gas.

The County and Agricultural Commission should assist farmers in exploring what grant monies are available through this program, and others, to improve energy efficiency in equipment (e.g., cold storage, pumps, etc.) through retrofit. Detailed information can be provided in the Assistance Brochure that will be prepared as a part of the *Agricultural Land Conservation Program*.

In addition, the County should participate at the State's process for resource allocation since resources are primarily legislated and negotiated at the State level.

11. *Interagency Coordination* Given the overlap between the service areas of PCWA and NID, as well as the potential for increased use of treated water near Lincoln, there should be increased coordination between districts to maximize the flexibility and quantity of agricultural water deliveries. Joint facilities should be considered for delivering reclaimed water to agricultural users. Alternatively, opportunities for trading reclaimed water to non-agricultural users in exchange for raw water should be explored (as described in the reclaimed water discussion above).